University Department of Commerce and Business Management
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A synopsis for Ph. D Registration
On

Study of Uses of Digital Technology by Private Sector Banks and Its Impact on Consumer Satisfaction: A Case Study of HDFC Bank in Ranchi District

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Introduction

Digital technology means electronic tools devices system and resources which organization utilize as they process or store data and complete other various function increasing productivity and efficiency. This is truly disruptive but exhilarating revolution taking place all across the world. Technology has moved into new era of innovation where even imaginations are coming true. Today's digital technology is marvel of Human efforts. It is evolving as we are communicating.

There is long list of Technology which are being used as business or support other business.

1) Business technologies
    a) Digital Market & Marketing
    b) Data Management
2) Information and Communication Technology
    a) Combination of Hardware and Software
    b) GPS and NAVIC
    c) Cloud Storage
    d) User Devices I.e. Cellphones, laptop, Bluetooth etc.
    e) Bluetooth, Wi-Fi Networks
3) Operational Technology
    a) Industrial Vehicle
    b) Industrial specific machines and devices
4) Educational Technology
    a) Interactive Learning tool
    b) Audio- Video, text-based resources
5) Adaptive Artificial Technology
    a) Chat bots
    b) Virtual Agents
    c) Self-driving cars
6) Block chain Technology
    a) Crypto Currency, Digital Currency
    b) NFTs

Technology is so hyped because of

- Stronger and Faster Communication
- Optimized efficiency
- Continuous innovation
- Tighter security
- Competitive edge
- Well-being of Human resources

Major technological advancement in the history of Banking sector in India

In India we can see public banks have head start. Private Banks come much later but their efforts made them on par with public bank. They do not hesitate to use extent of technology to please their customer's need. Below we can see an overall journey of Indian banking sector technological advancement journey.

1) **Pre independence Era to 1970:** The period before 1970s Pre-Independence Era and Post-Independence Era, where our India was struggling to grow banking activities are done on Heavy Ledger Books, Hand written transactions, Physical Record. The limited technological infrastructure was cause that the banking facilities are unavailable to all. If we take a peek at period between of 1947 to 1970, we can see that Indian Government already aware of importance of Banking so they already taking huge steps to reform banking sector of India. Strengthen the Reserve Bank of India Act, 1934, Banking Regulation Act, 1949, State Bank of India Act, 1955, Nationalization of banks in 1970s etc.

2) **Introduction of Computers (1970s to 1980s):** Around the world computer were introduced in 1920s already even ATMs were started to be used by 1967s in developed countries. India was almost half of century behind. It seen a revolution by introducing the Computers and Core banking system Operations in the early of 1980. This helps banking a lot by reducing a lot of manual work by automation of ledger maintenance, Accounts management and reporting. This transition of technology improved efficiency drastically but not optimally.

3) **Networking, ATMs, & Electronic fund Transfer (1980s to 2000s):** Since computers were making an impact of already but still underutilized, next step was taken by RBI, using of Electronic Fund Transfer Technique (NEFT& RTGS) between Banks. Additionally, introduction of ATMS also brought convenience to customers by producing access to cash without human interaction. Up to this time Indian Government has already identified the importance of the technology in the banking so establish the Institute for development and Research in Banking Technology (IDRBT) in year 1996 to promote technological adaptation in banking.

4) **Core Banking and Internet Banking (2000s):** The early 2000s marked a significant toward Core Banking Solutions (CBS) in India by adopting centralized system, enabling the real -time transaction across branches. Internet banking gained popularity allowing consumers to access their accounts and perform transactions from comfort of the home. Telephone banking like services started to shape the Indian banking sector. Even the services which are available at our fingertip is possible because of the Core Banking System.

5) **Financial inclusion and Aadhar:** The world witnesses a focus on financial inclusion in India. With government launching Adhaar project giving unique digital identity to citizen of India and Pradhan Mantri Jan Dhan Yojna to provide banking services to unbanked population. Such thing played a crucial role in simplifying customer authentication, enabling direct benefit transfer, increased banking population of the country.

6) **Mobile Banking, Digital Payment & Unified Payment Interface (2010-2020):** the proliferation of smartphones, affordable internet data, easy authentication led to rapid growth of mobile banking and Digital platform apps like Paytm, PhonePe etc. These apps revolution the way people transact, making digital payment accessible to vast population. Digital Wallet services becomes famous giving rise to the Fintech Companies in numbers in our country. With UPI introduction not only Fintech but Banks too get into Financial Inclusion.

7) **Block chain Technology, Regulatory Frameworks, Machine Learning & Artificial Intelligence (Present Innovations):** in recent years, Indian banks have been exploring block chain Technology for secure and efficient Cross-Border Transaction. Increasing security of the banking system to tackle potential online threats. Artificial Intelligence is also started to be used in Chat Bots, Virtual Agents to provide Hyper Personalized Banking services. AI chat bots, Quantum Banking, Immersive Technology (Augmented Reality and Virtual Reality) are the latest innovation which hold potential to change our banking experience. The list goes on and on. The RBI has also been working on a regulatory framework for potential adoption of digital Technology.
   New Technology kills old Technology, it brings new threat, new opportunity, new solution leaving only option to adoption to these changes in our favor.

Types of banks in India

Central Bank - Central banks of the country is apex body which regulate other banks in the country. **Reserve Bank of India** is central bank of India. Central banks are also known as banker's bank as it provides assistance to other banks of the country, guide and regulate them and manages the financial system of the country. Issue of currency notes and using monetary policy regulating flow of currency in the economy is its crucial job. Central bank only interacts with other banks, Government not with general public.

Commercial Bank- the commercial banks are those banks who interacts with the general public, small organization, businesses. They are further classified in following

- Public Sector Banks
- Private Sector Banks
- Foreign Banks
- Regional Rural Banks
- Co- Operative banks

- Small Finance Banks
- Specialized Banks
- Payment Banks

Private Sector Banks in India

The banks where majority of stakes are in hands of private organization or individual or group of peoples are classified as Private sector Banks. These banks have emerged after 1991 great economic reforms of India. Public sector banks initially predominated the Indian banking industry but since private sector banks emergence have had tremendous growth.

Major Private Banks in India

- HDFC Bank
- Citi Bank
- Axis Bank
- ICICI Bank
- IndusInd Bank
- Kotak Mahindra Bank
- Yes Bank
- IDFC
- Bandhan Bank, etc.

Banking Sector in India

Banking system is referring to the Financial Institutes our economy which is a part of Huge interconnected, complex and complicated financial system of India. Indian banking sector is playing pivotal role in financial landscape. It provides various financial services to the individuals, businesses and Governments as well. Such services can be categorized in followings:

Functions of Commercial Banks

i) Primary Functions
   (a) Accepting Deposits
      (i) Saving Deposits
      (ii) Fixed Deposits
      (iii) Recurring Deposits
      (iv) Current Deposits, etc.
   (b) Providing Advances and Loans
      (i) Bank Overdrafts
      (ii) Cash credit
      (iii) Loans for various purposes
      (iv) Discounting bills of exchange

ii) Secondary Function

(a) Agency Function

(i) Transfer of Funds

(ii) Periodic Collections & Payment

(iii) Portfolio Management

(iv) Other Agency Functions

(b) Utility Function

(i) Issue letters of credit, travelers check, etc.

(ii) Undertaking safe custody of valuables

(iii) Foreign Exchange

(iv) Underwriting share & Debenture

(v) Project reports

(vi) Standing guarantee for customers

(vii) Social welfare programs, etc.

Customer: For a Banking Organization customer refers to any individual, group of people any business entities who holds an account in the bank and opt for their services i.e. Making deposit and taking loans,

A Profile of HDFC Bank:

HDFC Bank Limited is a foreign majority owned, Indian banking and financial services company headquartered in Mumbai. It is India's largest private sector bank and the world's 10th-largest bank by market capitalization as of May 2024. The Reserve Bank of India (RBI) has identified the HDFC Bank, State Bank of India, and ICICI Bank as Domestic Systemically Important Banks (D-SIBs), which are often referred to as banks that are “too big to fail”.

The bank was incorporated in August 1994 after its erstwhile parent HDFC received an 'in principle' approval from the RBI to set up a bank in the private sector, as part of its liberalization of the Indian banking industry, and commenced operations in January 1995. With a market capitalization of $145 billion (as of April 2024), HDFC Bank is the third-largest company on Indian stock exchanges. It is the sixteenth largest employer in India with nearly 1.73 lakh employees.[1]

[1] https://en.wikipedia.org/wiki/HDFC_Bank

Digital banking service highlights of HDFC Bank[2]

- HDFC Bank offers a consistent digital experience to its 7.1 crore customers
- Significant online fixed deposit bookings.
- Rapid growth in e-commerce card volumes and unassisted acquisitions.
- UPI switch volumes increased 7x over 3 years.
- Core banking transaction volumes tripled.
- Robust internal APIs and partner APIs.
- Concurrency capacity for net and mobile banking.

Review of Literature

1. **Gupta Pallavi, Mishra Chhaya Mangal, Rahman, (2013)[3]**
   In this article author said that Private Banks have been successful in achieving satisfying relationship with its customers with good services and they have been successful in implementing tangible factors like modern equipment, infrastructural facilities, quality of materials used etc., however, public sector banks have to improve a lot in this area.

2. **Mistry, Snehal Kumar, (2013)[4]**
   In this article author said that Role of banking industry is important in accelerating the economic growth. With the expansion of banking services to peoples excluded from banking services to large corporate searching fund for their activities, makes the importance of banking services. Therefore, customer satisfaction is the key for many banks to survive in competition.

3. **Dr. Vijayaragavan (2014)[5]**
   In this article author said that the banks deployed to technology intensive solutions like enhancing core banking value, revamping the digital agenda, moving from information to insight, dealing with a changing risk regime, from cash to electronic

[2] TECH& DIGITAL LANDSCAPE May 2022 by HDFC bank https://www.hdfcbank.com/content/bbp/repositories/723fb80a-2dde-42a3-9793-7ae1be57c87f/?path=/Footer/About%20Us/Investor%20Relation/Detail%20PAges/Financial%20Information/PDF/Track-5.B-Digital-and-Technology.pdf

[3] Gupta Pallavi, Mishra Chhaya Mangal, Rahman, (2013). A Comparative Study on Customer Satisfaction in Indian Public Sector and Private Sector Banks (with special reference to Delhi and NCR region) International Journal of Social Science & Interdisciplinary Research ISSN 2277 -3630 IJSSIR, Vol. 2 (8),

[4] Measuring customer satisfaction in banking sector: with special reference to banks of Surat city, Asia Pacific Journal of Marketing & Management Review ISSN 2319-2836Vol.2 (7)

[5] Dr. Vijayaragavan (2014) Modern Banking Services A Key Tool for Banking Sector International Journal of Commerce Business and Management (IJCOM), ISSN 2319-2828 Vol. 3, No.4

modes of payment, grappling with financial inclusion, empowering employees and accelerating innovation. Banks have changed in their operations and moved towards universal banking along with the increased usage of technology. Majority of banks are insisting on cashless and paperless payment modes. Today banking is known as innovative banking

4. **Dixit, Neha & Dutta, Saroj (2010)[6]**

In this article author told us that the acceptance of e-banking services among adult customers and also indicates level of concern regarding security and privacy issues in Indian context. The finding depicts many factors like security & privacy, trust, innovativeness, familiarity, awareness level increases the acceptance of e-banking services among Indian customers

5. **Ahamed Riaz K (2019)[7]**

Its results reveal that all the variables of Service Quality like Tangibles, Reliability, Responsiveness, Assurance and Empathy of the respondents exhibits a significant difference between gender, age, education, occupation and income of the respondents. Customer Satisfaction analysis and analysis of digital banking problems shows a significant difference between Genders, marital status, age, education, occupation and income of the respondents.

6. **Gattamraju Sreelatha (2019)[8]**

This research paper has finding that E banking initiatives of the banks are becoming more client centric, e banking customers are more tech savvy, and the system is becoming more inclusive. Many of the traditional banks have adopted strong electronic banking strategies. The financial markets are evolving at a much faster rate forcing the banking sector to adapt the disruptive model in customers and information technology. Customers and customer satisfaction has taken front seat.

7. **Patel, Jignesh Kumar, Bharat Bhai (2023)[9]**

The research finding indicates that positive sentiment for digitalized banking services as it enables quicker transaction, ease of use, understanding of digital content but having shown the concern on Security, Privacy, trust in great issue for younger generation.

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[6] Dixit, Neha & Dutta, Saroj K (2010). Acceptance of E-banking among Adult Customers: An Empirical Investigation in India. Journal of Internet Banking and Commerce, Vol. 15 no. 2

[7] Effect of Service Quality of Digital Banking on the Customer Satisfaction of Public Sector Banks in Kerala, (2019), Bharathiar University , http://hdl.handle.net/10603/372660

[8] Customer satisfaction in E banking a comparative study of selected banks in south Bengaluru Karnataka state,(2019), Reva University http://hdl.handle.net/10603/277903

[9] A Study on Digital Banking Functionality and Outcomes of Customer Satisfaction as Empirical Investigation, (2023), http://hdl.handle.net/10603/526850

Relevance of Study

Digital technology has significantly transformed organizations and people's lives over the years, with banks and their customers being no exception. Technological advancements have enabled banks to offer more than just traditional banking services. The wide range of services provided by banks today is a proof to the pivotal role of technology in our daily lives.

Customer satisfaction leads to greater customer retention, higher lifetime value and showing brand reputation. It can serve as a differentiating factor in between of thriving and falling factor of a business.

In India privately owned Bank starts to emerge after year 1991 economic reforms. Despite late start they have proved their efficiency, innovation driven by their competitive nature. They have achieved such feat by focusing on consumer satisfaction.

HDFC bank established in year 1994, is the oldest private sector bank. Even though HDFC bank has a late start of almost half of century than the largest public sector bank, State Bank of India (SBI), HDFC Bank has become India's largest Bank in terms of market capitalisation leaving SBI behind. It made possible because of their continuous adoption to the Digital Technology.

Our study is going to be based upon Geographical location of Ranchi, Jharkhand. In the demography of Ranchi, we can see unique population mix of traditional, tribal people and tech savvy energetic youth, unique faith practice Sarna by local resident. Ranchi is also in phase of development therefore we can also understand importance of finance here. HDFC Banks has shown its worth by its performance for Study of Uses of Digital Technology by Private Sector Banks and Its Impact on Consumer Satisfaction.

This study aims to know how does HDFC Bank's digital technology adoption align with unique socio-economic landscape of Ranchi, Jharkhand, people's perception about digital banking services. This study will help us to uncover emerging trend, social impact of digital banking solutions regarding Ranchi. Using such data banks can make more customer centric decision, can have competitive edge via information of innovation.

Objectives of Study

I. To study technology enabled banking product and services being provided by HDFC bank in Ranchi
II. To understand the impact of Digital Technology adaption on Customers of Ranchi,
III. To understand technological readiness of people of Ranchi for the upcoming Technological Innovations in Banking,

Hypothesis

For the purpose of our Ph.D research topic "Study of Uses of Digital Technology by Private Sector Banks and Its Impact on Consumer Satisfaction: A case Study of HDFC Bank in Ranchi District" following hypothesis has been taken assuming that digital technology may be challenging for those who were using conventional method but huge convenience for younger generations & there is noticeable difference in satisfaction level before and after implication of such technology. If our findings support either H_{11} or H_{12} then our null hypothesis that there is no relationship between the variables digital technology and customer satisfaction will be rejected.

H_{11} : Using Digital Technology does affect traditional customer, but drastically improving experience of younger tech ready customers overall affecting customer satisfaction

H_{12} : The introduction of digital technology in banking has led to an overall positive change in customer satisfaction levels

H_0 : There are no significant impact of digital technology used by banks on consumer satisfaction.

Research Methodology

The study is adapting to mixed-method research design. Combining qualitative approach to know insights how technology was used and level of consumer satisfaction and quantitative approach for numerical data of consumer satisfaction to provide holistic understanding of the impact of technological adoption on Consumer Satisfaction by banks.

The study aims to understand the extent of the transformation and identify key factors of it.

Data Collection

I. **Primary Data:**
   a. **Quantitative Data**: Surveys with structured questionnaires physically or digitally can be distributed to a sample of HDFC Bank customers in Jharkhand. The questionnaire should measure various aspects of consumer satisfaction and the frequency and type of digital technology usage.
   b. **Qualitative Data:** Semi-structured interviews with bank management and focus groups with customers can provide deeper insights into the perceived benefits and challenges of digital technology.

II. **Secondary Data:** Various Books, Research Journals, Newspapers, Magazines, Departmental Reports, Internet searches will be used.

Sampling

I. **Random Sampling:** For quantitative surveys a random sample of customers who uses HDFC Bank's Digital services would ensure representativeness. Their experiences and suggestion on Digital services will be taken into consideration too.
II. **Purposive Sampling:** For qualitative interviews, selecting participants who are knowledgeable about the bank's digital initiatives would be more appreciable.

Sample Size

For the purpose of our study primary data shall be collected via questionnaire and semi-structured interviews on sample size of 350 respondents. In which 300 respondents will be Customers of the HDFC Bank Ranchi for random sampling aiming to collect data about their awareness to services offered by the banks and their preference, satisfaction level etc. and 50 respondents will be HDFC Bank Ranchi employees for purposeful sampling aiming to collect data about services offered and response rate of customers of these services etc.

Data Analysis:

Quantitative Analysis: Statistical tools of analysis like mean, standard Deviation, hypothesis testing etc. will be used to determine the relationship digital technology and customer Satisfaction.

Qualitative Analysis: Thematic analysis, content analysis like tools can be used to on interviews data to uncover common themes and narratives around digital technology's impact.

Tools and Technique

- For survey tools like Digital Google Forms, & Physical Form to collect data
- For quantitative analysis Software SPSS or RStudio will be used for Mean, Percentage, Variability Analysis, Correlation Analysis
- For hypothesis test Chi-squire Test, t-test will be conducted
- Software ATLAS.ti will be used to do Thematic Analysis, Content Analysis, Narrative Analysis
- Any relevant tool required if

Limitation of Study

- This study is limited to geographical Area of Ranchi.
- Study limited to small sample of HDFC Bank of Ranchi, which is just one player in the private banking sector. A broader sample including multiple banks would enhance the study's robustness.
- Rapid Technological advancement is the reason new trend and & innovations are emerging regularly. The Scope of this study is limited up Year 2023 end.

- The study does not extensively explore external factors i.e. economic conditions, regulatory changes, or competitive pressures that impact consumer satisfaction.

Tentative Chapterisation

Chapter I.	Introduction & Literature Review
Chapter II.	Overview of Private Sector Banks in India With Context to Digital Technology Changes
Chapter III.	Overview of use of Digital technology & its impact on customer satisfaction on customers of HDFC Bank in Ranchi
Chapter IV.	Data Collection, Data Analysis and Hypothesis Testing
Chapter V.	Conclusion, Findings & Suggestion

Signature of Supervisor

Signature of Research Scholar